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EXAMINER	
MANDEVILLE, JASON M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,976	MATSUDA, YOJIRO	
	Examiner	Art Unit	
	JASON M. MANDEVILLE	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claim 6** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. **Claim 6** recites the limitation “the voltage of the predetermined polarity” through the claim. There is insufficient antecedent basis for this limitation in **Claims 1, 4, or 5**, from which **Claim 6** depends. The examiner assumes that **Claim 6** is meant to depend from one of **Claims 2 or 3**, which provide antecedent

basis for “the voltage of the predetermined polarity;” however, it is unclear which claim is intended to provide the antecedent basis.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US 2005 / 0270267) in view of Kuwahara et al. (hereinafter “Kuwahara” US 6,486,866).

6. As pertaining to **Claim 1**, Johnson discloses (see Fig. 1 and Figs. 2A-2C) a display apparatus (see Page 1, Para. [0001]-[0003] and see Page 2, Para. [0025]), comprising:

a first substrate (i.e. ,see (11)) provided with a container (see Figs. 2A-2C; see Page 2 through Page 3, Para. [0027]-[0030]),

a pair of electrodes (i.e., see (6, 6', 7)) for generating an electric field in the container (again, see Figs. 2A-2C along with Fig. 3; also see Page 2 through Page 3, Para. [0027]-[0030]), and

charged particles (i.e., see (14, 14')) held in the container (again, see Figs. 2A-2C), the charged particles (14, 14') being moved by the electric field (again, see Fig. 3) to determine a distribution of the charged particles (14, 14') in the container (see Figs. 2A-2C), thereby to effect display (again, see Page 2 through Page 3, Para. [0027]-[0030]),

wherein the charged particles (14, 14') are of two types which have mutually different charge polarities (i.e., positive and negative charge polarities) and a substantially identical color (i.e., black, for example; see Page 2 through Page 3, Para. [0027]-[0030] along with Abstract).

While it is implicit in the display apparatus disclosed by Johnson that the container (see Figs. 2A-2C) must be a closed container in order to hold the dispersion medium and the charged particles of the display, Johnson does not explicitly show the means by which the container is closed. However, the use of microcapsules and barrier walls to segment display pixels in an electrophoretic display are well known in the art and the implementation of such microcapsules and barrier walls is well established. In fact, Kuwahara discloses (see Fig. 1, for example) an electrophoretic display apparatus in which display pixels (6) are segmented into closed containers made up of microcapsules with barrier walls or cells with barrier walls (see Col. 10, Ln. 63-67

through Col. 11, Ln. 1-9 and Ln. 23-35; as well as Col. 11, Ln. 50-67 through Col. 12, Ln. 1-11; and see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13). It is a goal of Kuwahara to provide an electrophoretic display with improved viewing quality and memory capability, as well as decreased eye fatigue and reduced power consumption (see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13). Further, the inventions of Johnson and Kuwahara are in the same field of endeavor. Further still, Kuwahara serves to disclose what is well known and established in the art, namely the use of barrier walls and microcapsules to implement the pixel structure in an electrophoretic display. Therefore, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to combine the teachings of Johnson with the teachings of Kuwahara such that the display device of Johnson (see Figs. 2A-2C) implements barrier walls and/or microcapsules as a well known and established technique for segmenting the display pixels.

7. As pertaining to **Claim 2**, Johnson discloses (see Fig. 4 and Figs. 2A-2C) that a display operation (i.e., see (Vn) in Fig. 4, for example) for forming a distribution of the charged particles (14, 14’; see Figs. 2A-2C) by applying a voltage (i.e., see (Vn), for example, in Fig. 4) of a predetermined polarity to the pair of electrodes(i.e., see (6, 6’, 7)) and a display operation (i.e., see (Vn+1) in Fig. 4, for example) for forming a distribution which is substantially identical to the distribution of the charged particles (i.e., (14, 14’); see Figs. 2A-2C and Fig. 4) by applying a voltage (i.e., see (Vn+1), for example in Fig. 4) of a polarity opposite to the predetermined polarity of the voltage are

alternately performed (see Fig. 4 along with Page 2 through Page 3, Para. [0027]-[0030]).

8. As pertaining to **Claim 3**, Johnson discloses (see Fig. 4 and Figs. 2A-2C) that a display operation (i.e., see (Vn) in Fig. 4, for example) for forming a distribution of the charged particles (14, 14') by applying a voltage (i.e., see (Vn), for example, in Fig. 4) of a predetermined polarity after applying a reset voltage (see (40) in Fig. 4, for example; wherein the disclosed "preset" operation is implemented to prepare the display for new image data and, thus, can equivalently be called a "reset" operation) for resetting the distribution of the charged particles (14, 14') and a display operation (i.e., see (Vn+1) in Fig. 4, for example) for forming a distribution which is substantially identical to the distribution of the charged particles (i.e., (14, 14'); see Figs. 2A-2C and Fig. 4) by applying a voltage (i.e., see (Vn+1), for example in Fig. 4) of a polarity opposite to the predetermined polarity of the voltage after applying a reset voltage (again, see (40) in Fig. 4) of a polarity opposite to that of the reset voltage for resetting the distribution of the charged particles (14, 14'; again, see Fig. 4 along with Page 2 through Page 3, Para. [0027]-[0030]).

9. As pertaining to **Claim 4**, the combined invention of Johnson and Kuwahara discloses (see Fig. 1, Fig. 4, and Figs. 2A-2C of Johnson; and see Fig. 1 of Kuwahara) that the apparatus further comprises a second substrate (i.e., see (12) in Figs. 2A-2C of Johnson) disposed opposite to the first substrate (i.e., see (11) in Figs. 2A-2C of

Johnson); a partition wall (i.e., such as that disclosed by Kuwahara), for defining the closed container (again, see Fig. 1, Fig. 4, and Figs. 2A-2C of Johnson; and see Fig. 1 of Kuwahara), disposed between the first and second substrates (i.e., see (11, 12) of Johnson); a display electrode (i.e., see (7) in Figs. 2A-2C of Johnson, for example), for distributing the charged particles (i.e., (14, 14') of Johnson), dispersed on the first substrate (i.e., (11) of Johnson) or the second substrate (i.e., (12) of Johnson); and first and second reset electrodes (i.e., (6, 6') of Johnson, for example) for collecting the charged particles (i.e., (14, 14') of Johnson) of two types at a part of and another part of the partition wall (i.e., implicitly for surrounding partition walls; again, see Fig. 1, Fig. 4, and Figs. 2A-2C of Johnson; and see Fig. 1 of Kuwahara), respectively, to reset the display of the charged particles (i.e., (14, 14') of Johnson; see Page 2 through Page 3, Para. [0027]-[0030] of Johnson; and see Col. 10, Ln. 63-67 through Col. 11, Ln. 1-9 and Ln. 23-35; as well as Col. 11, Ln. 50-67 through Col. 12, Ln. 1-11; and see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13 of Kuwahara).

10. As pertaining to **Claim 5**, the combined invention of Johnson and Kuwahara discloses (see Fig. 1, Fig. 4, and Figs. 2A-2C of Johnson; and see Fig. 1 of Kuwahara) that the apparatus further comprises a second substrate (i.e., see (12) in Figs. 2A-2C of Johnson) disposed opposite to the first substrate (i.e., see (11) in Figs. 2A-2C of Johnson); a partition wall (i.e., such as that disclosed by Kuwahara), for defining the closed container (again, see Fig. 1, Fig. 4, and Figs. 2A-2C of Johnson; and see Fig. 1 of Kuwahara), disposed between the first and second substrates (i.e., see (11, 12) of

Johnson); a display electrode (i.e., see (7) in Figs. 2A-2C of Johnson, for example), for distributing the charged particles (i.e., (14, 14') of Johnson), dispersed on the first substrate (i.e., (11) of Johnson) or the second substrate (i.e., (12) of Johnson); and first and second reset electrodes (i.e., (6, 6') of Johnson, for example) for collecting the charged particles (i.e., (14, 14') of Johnson) of two types on the first substrate (i.e., (11) of Johnson) to reset the display of the charged particles (i.e., (14, 14') of Johnson; see Page 2 through Page 3, Para. [0027]-[0030] of Johnson; and see Col. 10, Ln. 63-67 through Col. 11, Ln. 1-9 and Ln. 23-35; as well as Col. 11, Ln. 50-67 through Col. 12, Ln. 1-11; and see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13 of Kuwahara).

11. As pertaining to **Claim 6**, Johnson discloses (see Fig. 1, Fig. 4, and Figs. 2A-2C) that the display electrode (i.e., (7)) is a common electrode, the voltage of the predetermined polarity (i.e., see (Vn) in Fig. 4, for example) is a relative potential difference between the common electrode (i.e., (7)) and one of the first and second reset electrodes (i.e., (6, 6')), and a display voltage (i.e., see (Vn+1) in Fig. 4, for example) which is opposite in polarity to the voltage of the predetermined polarity is a relative potential difference between the common electrode (i.e., (7)) and the other one reset electrode (i.e., 6, 6'; again, see Page 2 through Page 3, Para. [0027]-[0030]).

12. As pertaining to **Claim 7**, both Johnson and Kuwahara disclose that the closed container can be a microcapsule disposed between the first and second substrates (i.e.,

see (11, 12) in Figs. 2A-2C of Johnson; also see Page 3, Para. [0032] of Johnson and see Col. 10, Ln. 63-67 through Col. 11, Ln. 1-9 and Ln. 23-35 of Kuwahara).

13. As pertaining to **Claim 8**, Johnson discloses (see Fig. 1 and Figs. 2A-2C) an electrophoretic display apparatus (see Page 1, Para. [0001]-[0003] and see Page 2, Para. [0025]) comprising:

first and second substrates (i.e., see (11, 12)) disposed with a predetermined spacing therebetween to provide a space (see Figs. 2A-2C; see Page 2 through Page 3, Para. [0027]-[0030]), and

migration particles (i.e., see (14, 14')) dispersed in the space (again, see Figs. 2A-2C), a distribution of the migration particles (14, 14') being changed in the space to effect display (again, see Figs. 2A-2C and Page 2 through Page 3, Para. [0027]-[0030]);

wherein the apparatus further comprises a display electrode (i.e., see any of (6, 6', 7)) for changing the distribution of the migration particles (14, 14') to effect display (again, see Figs. 2A-2C and Page 2 through Page 3, Para. [0027]-[0030]), and a dispersion medium (i.e., an electrophoretic medium) which is filled in the space (see Figs. 2A-2C) and has a relative dielectric constant different from the migration particles (14, 14'; i.e., implicit in the implementation of the particles (14, 14') and the electrophoretic medium) which are dispersed in the dispersion medium (i.e., electrophoretic medium; again, see Figs. 2A-2C and Page 2 through Page 3, Para. [0027]-[0030]), and

wherein, the migration particles (14, 14') are migration particles (14, 14') of two types having different charge polarities (i.e., positive and negative charge polarities) and a substantially identical color (i.e., black, for example; see Page 2 through Page 3, Para. [0027]-[0030] along with Abstract) as the migration particles (14, 14'), and a display voltage (see (Vn, Vn+1), for example in Fig. 4) of a predetermined polarity (see Fig. 4) and a display voltage of a polarity opposite to the predetermined polarity of the display voltage (again, see Fig. 4) are alternately applied to the display electrode (i.e., see any of (6, 6', 7), see Fig. 4 along with Page 2 through Page 3, Para. [0027]-[0030]).

While it is implicit in the display apparatus disclosed by Johnson that the container (see Figs. 2A-2C) must be a closed space in order to hold the dispersion medium and the charged particles of the display, Johnson does not explicitly show the means by which the container is closed. Further, while the relative dielectric constant of the dispersion medium disclosed by Johnson is implicitly different from the migration particles, Johnson does not explicitly state this fact. However, the use of microcapsules and barrier walls to segment display pixels in an electrophoretic display are well known in the art and the implementation of such microcapsules and barrier walls is well established. In fact, Kuwahara discloses (see Fig. 1, for example) an electrophoretic display apparatus in which display pixels (6) are segmented into closed spaces made up of microcapsules with barrier walls or cells with barrier walls (see Col. 10, Ln. 63-67 through Col. 11, Ln. 1-9 and Ln. 23-35; as well as Col. 11, Ln. 50-67 through Col. 12, Ln. 1-11; and see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13). Furthermore,

Kuwahara discloses that the relative dielectric constant of a dispersion medium can be different from that of migration particles in order to control the electrophoretic mobility of the migration particles (see Col. 17, Ln. 36-63; Col. 25, Ln. 20-31; and Col. 26, Ln. 61-67 through Col. 27, Ln. 1-11). It is a goal of Kuwahara to provide an electrophoretic display with improved viewing quality and memory capability, as well as decreased eye fatigue and reduced power consumption (see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13). Further, the inventions of Johnson and Kuwahara are in the same field of endeavor. Further still, Kuwahara serves to disclose what is well known and established in the art, namely the use of barrier walls and microcapsules to implement the pixel structure in an electrophoretic display and that the dielectric constant of the dispersion medium can be changed to control electrophoretic mobility. Therefore, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to combine the teachings of Johnson with the teachings of Kuwahara such that the display device of Johnson (see Figs. 2A-2C) implements barrier walls and/or microcapsules as a well known and established technique for segmenting the display pixels. Further, it would have been obvious to one of ordinary skill in the art that the dielectric constant of the dispersion medium can be different than that of the migration particles in order to control electrophoretic mobility.

14. As pertaining to **Claim 9**, Johnson discloses (see Fig. 1 and Figs. 2A-2C) that the apparatus further comprises a reset electrode (i.e., see (6, 6’), for example) for collecting the migration particles (14, 14’) and resetting a distribution of the migration

particles (14, 14’), and the display electrode (i.e., see any of (6, 6’, 7)) and the reset electrode (i.e., see (6, 6’)) are disposed to provide a non-uniform electric field distribution therebetween (see Fig. 3; also see Page 2 through Page 3, Para. [0027]-[0030]), and

wherein an AC voltage (see Fig. 4) is applied to the display electrode (i.e., see any of (6, 6’, 7)) when the display is reset (see (40) in Fig. 4, for example, wherein the disclosed "preset" operation is implemented to prepare the display for new image data and, thus, can equivalently be called a "reset" operation; also see Page 2 through Page 3, Para. [0027]-[0030]).

15. As pertaining to **Claim 10**, the combined invention of Johnson and Kuwahara discloses (see Fig. 1 and Figs. 2A-2C of Johnson; also see Fig. 1 of Kuwahara) that an operation for moving the migration particles (i.e., see (14, 14’) of Johnson) in a strong electric field area of the non-uniform electric field (see Fig. 3 of Johnson, for example) is a reset operation when a relative dielectric constant of the migration particles (i.e., see (14, 14’) of Johnson) is larger than that of the dispersion medium, and an operation for moving the migration particles (i.e., see (14, 14’) of Johnson) in a weak electric field area of the non-uniform electric field (again, see Fig. 3 of Johnson) relative dielectric constant of the migration particles (i.e., see (14, 14’) of Johnson) is smaller than that of the dispersion medium (again, see Page 2 through Page 3, Para. [0027]-[0030] of Johnson; and see Col. 17, Ln. 36-63; Col. 25, Ln. 20-31; and Col. 26, Ln. 61-67 through Col. 27, Ln. 1-11 of Kuwahara where it is explicitly discloses that the dielectric constant

of the dispersion medium can be used to control the electrophoretic mobility of the migration particles).

16. As pertaining to **Claim 11**, Johnson discloses (see Fig. 1 and Figs. 2A-2C) a driving method for driving a display apparatus (see Page 1, Para. [0001]-[0003] and see Page 2, Para. [0025]), comprising a first substrate (i.e., see (11)) provided with a container (see Figs. 2A-2C; see Page 2 through Page 3, Para. [0027]-[0030]), charged particles (i.e., see (14, 14')) of two types which have mutually different charge polarities (i.e., positive and negative charge polarities) and a substantially identical color (i.e., black, for example; see Page 2 through Page 3, Para. [0027]-[0030] along with Abstract) and are held in the container (again, see Figs. 2A-2C), and an electrode (i.e., see (6, 6', 7)) for generating an electric field (see Fig. 3, for example) in the container (again, see Figs. 2A-2C), wherein the charged particles (14, 14') are moved by the electric field (again, see Fig. 3, for example) to determine a distribution of the charged particles (14, 14') in the container (again, see Figs. 2A-2C), thereby to effect display (see Page 2 through Page 3, Para. [0027]-[0030]);

the driving method comprising the steps of:

providing a display electrode (again, see (7), for example) for changing a distribution of the charged particles (14, 14') to effect the display and first and second reset electrodes (i.e., see (6, 6'), for example) for changing the distribution of the charged particles (14, 14') to reset the display (see Page 2 through Page 3, Para. [0027]-[0030]), and

repeating a first reset operation (see (40) in Fig. 4, for example) for performing reset (i.e., equivalently referred to as “preset”) of the display (i.e., the disclosed "preset" operation is implemented to prepare the display for new image data and, thus, can equivalently be called a "reset" operation) by applying a reset voltage (again, see (40) in Fig. 4) of a predetermined polarity (see Fig. 4) to the first and second reset electrodes (i.e., (6, 6’)), a first display operation (i.e., see (Vn) in Fig. 4, for example) for performing the display by applying a display voltage (see Fig. 4) of a predetermined polarity to the display electrode (i.e., (7)), a second reset operation (again, see (40) in Fig. 4) for performing reset of the display by applying a reset voltage (see (40) in Fig. 4) of a polarity opposite to the predetermined polarity of the reset voltage (see Fig. 4) to the first and second electrodes (6, 6’), and a second display operation (i.e., see (Vn+1) in Fig. 4, for example) for performing the display by applying a display voltage (again, see Fig. 4) of a polarity opposite to the predetermined polarity to the display electrode (i.e., (7), see Fig. 4 along with Page 2 through Page 3, Para. [0027]-[0030]).

While it is implicit in the display apparatus disclosed by Johnson that the container (see Figs. 2A-2C) must be a closed container in order to hold the dispersion medium and the charged particles of the display, Johnson does not explicitly show the means by which the container is closed. However, the use of microcapsules and barrier walls to segment display pixels in an electrophoretic display are well known in the art and the implementation of such microcapsules and barrier walls is well established. In fact, Kuwahara discloses (see Fig. 1, for example) an electrophoretic display apparatus

in which display pixels (6) are segmented into closed containers made up of microcapsules with barrier walls or cells with barrier walls (see Col. 10, Ln. 63-67 through Col. 11, Ln. 1-9 and Ln. 23-35; as well as Col. 11, Ln. 50-67 through Col. 12, Ln. 1-11; and see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13). It is a goal of Kuwahara to provide an electrophoretic display with improved viewing quality and memory capability, as well as decreased eye fatigue and reduced power consumption (see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13). Further, the inventions of Johnson and Kuwahara are in the same field of endeavor. Further still, Kuwahara serves to disclose what is well known and established in the art, namely the use of barrier walls and microcapsules to implement the pixel structure in an electrophoretic display. Therefore, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to combine the teachings of Johnson with the teachings of Kuwahara such that the display device of Johnson (see Figs. 2A-2C) implements barrier walls and/or microcapsules as a well known and established technique for segmenting the display pixels.

17. As pertaining to **Claim 12**, Johnson discloses (see Fig. 1 and Figs. 2A-2C) a driving method for driving an electrophoretic display apparatus (see Page 1, Para. [0001]-[0003] and see Page 2, Para. [0025]) comprising first and second substrates (i.e., see (11, 12)) disposed with a predetermined spacing therebetween to provide a space (see Figs. 2A-2C; see Page 2 through Page 3, Para. [0027]-[0030]), and migration particles (i.e., see (14, 14')) dispersed in the space (again, see

Figs. 2A-2C), a distribution of the migration particles (14, 14’) being changed in the space to effect display (again, see Figs. 2A-2C and Page 2 through Page 3, Para. [0027]-[0030]);

the method comprising the steps of:

providing a display electrode (i.e., see any of (6, 6’, 7)) for changing the distribution of the migration particles (14, 14’) to effect display (again, see Figs. 2A-2C and Page 2 through Page 3, Para. [0027]-[0030]), a reset electrode (i.e., see (6, 6’)) for changing the display rewriting of the migration particles (14, 14’) to reset the display (again, see Figs. 2A-2C and Page 2 through Page 3, Para. [0027]-[0030]), and a dispersion medium (i.e., an electrophoretic medium) which has a relative dielectric constant different from the migration particles (14, 14’; i.e., implicit in the implementation of the particles (14, 14’) and the electrophoretic medium) which are dispersed in the dispersion medium (i.e., electrophoretic medium; again, see Figs. 2A-2C and Page 2 through Page 3, Para. [0027]-[0030]), and

using migration particles (14, 14’) of two types having different charge polarities (i.e., positive and negative charge polarities) and a substantially identical color (i.e., black, for example; see Page 2 through Page 3, Para. [0027]-[0030] along with Abstract) as the migration particles (14, 14’),

arranging the display electrode (i.e., see any of (6, 6’,7)) and the reset electrode (i.e., see (6, 6’), for example) so as to provide a non-uniform electric field (see Fig. 3, for example) distribution therebetween (again, see Page 2 through Page 3, Para. [0027]-[0030]), and

repeating a first display operation (i.e., see (Vn) in Fig. 4, for example) for performing the display by applying a display voltage of a predetermined polarity (see Fig. 4) to the display electrode (i.e.,. see any of (6, 6', 7), a reset operation (see (40) in Fig. 4, for example; wherein the disclosed "preset" operation is implemented to prepare the display for new image data and, thus, can equivalently be called a "reset" operation) for performing reset of the display (i.e., equivalently referred to as "preset") by applying an AC voltage (see (40) in Fig. 4) to the display electrode (i.e., see any of (6, 6', 7), and a second display operation (i.e., see (Vn+1) in Fig. 4, for example) for performing the display by applying a display voltage (again, see Fig. 4) of a polarity opposite to the predetermined polarity to the display electrode (i.e., see any of (6, 6', 7), see Fig. 4 along with Page 2 through Page 3, Para. [0027]-[0030]).

While it is implicit in the display apparatus disclosed by Johnson that the container (see Figs. 2A-2C) must be a closed space in order to hold the dispersion medium and the charged particles of the display, Johnson does not explicitly show the means by which the container is closed. Further, while the relative dielectric constant of the dispersion medium disclosed by Johnson is implicitly different from the migration particles, Johnson does not explicitly state this fact. However, the use of microcapsules and barrier walls to segment display pixels in an electrophoretic display are well known in the art and the implementation of such microcapsules and barrier walls is well established. In fact, Kuwahara discloses (see Fig. 1, for example) an electrophoretic display apparatus in which display pixels (6) are segmented into closed spaces made

up of microcapsules with barrier walls or cells with barrier walls (see Col. 10, Ln. 63-67 through Col. 11, Ln. 1-9 and Ln. 23-35; as well as Col. 11, Ln. 50-67 through Col. 12, Ln. 1-11; and see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13). Furthermore, Kuwahara discloses that the relative dielectric constant of a dispersion medium can be different from that of migration particles in order to control the electrophoretic mobility of the migration particles (see Col. 17, Ln. 36-63; Col. 25, Ln. 20-31; and Col. 26, Ln. 61-67 through Col. 27, Ln. 1-11). It is a goal of Kuwahara to provide an electrophoretic display with improved viewing quality and memory capability, as well as decreased eye fatigue and reduced power consumption (see Col. 15, Ln. 64-67 through Col. 16, Ln. 1-13). Further, the inventions of Johnson and Kuwahara are in the same field of endeavor. Further still, Kuwahara serves to disclose what is well known and established in the art, namely the use of barrier walls and microcapsules to implement the pixel structure in an electrophoretic display and that the dielectric constant of the dispersion medium can be changed to control electrophoretic mobility. Therefore, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to combine the teachings of Johnson with the teachings of Kuwahara such that the display device of Johnson (see Figs. 2A-2C) implements barrier walls and/or microcapsules as a well known and established technique for segmenting the display pixels. Further, it would have been obvious to one of ordinary skill in the art that the dielectric constant of the dispersion medium can be different than that of the migration particles in order to control electrophoretic mobility.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON M. MANDEVILLE whose telephone number is 571-270-3136. The examiner can normally be reached on Monday through Friday 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Eisen can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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